

What is claimed is:

1. A copolymer surfactant chain comprising at least one of hydrophobic monomer and a plurality of hydrophilic monomers.
2. A copolymer surfactant comprising:
 - (a) from about 10% to about 80% by weight of at least one C₃-C₁₂ α,β -ethylenically unsaturated carboxylic acid or anhydride;
 - (b) from about 10% to about 80% by weight of at least one C₂-C₁₂, α,β -ethylenically unsaturated vinyl monomer;
 - (c) from about 0.01% to about 20% by weight of at least one surfactant monomer; and
 - (d) optionally, up to about 5% by weight of an ethylenically unsaturated cross-linking monomer.
3. The copolymer surfactant of claim 2, wherein the at least one C₃-C₁₂ α,β -ethylenically unsaturated carboxylic acid or anhydride is methacrylic acid, acrylic acid, itaconic acid, or a mixture thereof.
4. The copolymer surfactant of claim 2, wherein the at least one C₂-C₁₂, α,β -ethylenically unsaturated vinyl monomer is selected from ethyl acrylate, ethyl methacrylate, butyl acrylate, methyl methacrylate, vinyl acetate, acrylonitrile, or a mixture thereof.
5. The copolymer surfactant of claim 4, wherein one C₂-C₁₂, α,β -ethylenically unsaturated vinyl monomer is vinyl acetate and at least one other C₂-C₁₂, α,β -ethylenically unsaturated vinyl monomer is ethyl methacrylate, butyl acrylate, methyl methacrylate, or a mixture thereof.
6. The copolymer surfactant of claim 5, wherein the C₂-C₁₂, α,β -ethylenically unsaturated vinyl monomers are butyl acrylate and vinyl acetate.

7. The copolymer surfactant of claim 5, wherein the C₂-C₁₂, α,β -ethylenically unsaturated vinyl monomers are ethyl methacrylate, butyl acrylate and vinyl acetate.
- 5 8. The copolymer surfactant of claim 2, wherein the surfactant monomer is a tristyrylphenylpoly(ethyleneoxy) (meth)acrylate, an alkylpolyethyleneoxy (meth)acrylate, an alkylphenylpolyethyleneoxy (meth)acrylate, or a mixture thereof, wherein each alkyl group contains, independently, from 1 to 30 carbon atoms.
- 10 9. The copolymer surfactant of claim 8, wherein the surfactant monomer is nonylpoly(ethyleneoxy) acrylate, decylpoly(ethyleneoxy) acrylate, undecylpoly(ethyleneoxy) acrylate, oleylpoly(ethyleneoxy) methacrylate, behenylpoly(ethyleneoxy) methacrylate, tristyrylphenylpoly(ethyleneoxy) methacrylate, or a mixture thereof.
- 15 10. A method of making the copolymer surfactant of claim 2 by solution copolymerization in a solvent, wherein the solvent is ethylene glycol, propylene glycol, glycerol, diethylene glycol, triethylene glycol, tetraethylene glycol, polyethylene glycol with a number average molecular weight below about 1,000 Daltons, or a mixture thereof.
- 20 11. A method of making the copolymer surfactant of claim 2 by emulsion copolymerization using an emulsifier, wherein the emulsifier is at least one anionic emulsifier, at least one nonionic emulsifier, or a mixture thereof.
- 25 12. The method of claim 11, wherein the emulsifier comprises a sulfonate, a sulfate, an alkylphenol ethoxylate, or a mixture thereof.
- 30 13. A copolymer surfactant consisting essentially of:
(a) from about 20% to about 45% by weight of methacrylic acid;
(b) from about 50% to about 75% by weight of a plurality of C₂-C₁₂, α,β -ethylenically unsaturated vinyl monomers, wherein one C₂-C₁₂, α,β -ethylenically unsaturated vinyl monomer is vinyl acetate and at least one other C₂-C₁₂, α,β -

ethylenically unsaturated vinyl monomer is ethyl methacrylate, butyl acrylate, methyl methacrylate, or a mixture thereof;

(c) from about 0.5% to about 13% by weight of a surfactant monomer selected from nonylpoly(ethyleneoxy) acrylate, decylpoly(ethyleneoxy) acrylate, undecylpoly(ethyleneoxy) acrylate, oleylpoly(ethyleneoxy) methacrylate, behenylpoly(ethyleneoxy) methacrylate, tristyrylphenylpoly(ethyleneoxy) methacrylate, or a mixture thereof;

(d) optionally, up to about 1% by weight of diallyl phthalate or ethylene glycol diacrylate.

10

14. A colorant composition comprising the copolymer surfactant of claim 1, water and at least one pigment.

15 15. The colorant composition of claim 14, which further comprises at least one oxygenated solvent.

16. A colorant composition comprising the copolymer surfactant of claim 2, water and at least one pigment.

20 17. The colorant composition of claim 16, which further comprises at least one oxygenated solvent.

25 18. A method of making a colorant composition comprising admixing the copolymer surfactant of claim 1, water and at least one pigment, wherein the pigment is an organic pigment, an inorganic pigment, or a mixture thereof.

19. The method of claim 18, wherein the colorant composition further comprises at least one conventional surfactant.

30 20. The method of claim 19, wherein the conventional surfactant is an anionic surfactant, a nonionic surfactant, an amphoteric surfactant, or a mixture thereof.

21. The method of claim 18, wherein the colorant composition further comprises a water-soluble polymer selected from a polycarboxylic acid, a copolymer comprising a monomer containing a carboxylic acid, an alkali soluble emulsion polymer, a cellulose derivative, a salt of a polyacrylic acid, a salt of a copolymer comprising a monomer containing an acrylic acid, polyvinylpyrrolidone, a copolymer comprising vinylpyrrolidone monomer, or a mixture thereof.

22. The method of claim 21, wherein the water-soluble polymer is a salt of a polyacrylic acid, a salt of a copolymer comprising a monomer containing an acrylic acid, or a mixture thereof.

23. The method of claim 18, wherein the inorganic pigment is titanium dioxide white, carbon black, lampblack, black iron oxide, yellow iron oxide, brown iron oxide, red iron oxide, or a mixture thereof.

24. The method of claim 18, wherein the organic pigment is phthalocyanine blue, phthalocyanine green, monoarylide yellow, diarylide yellow, benzimidazolone yellow, heterocyclic yellow, DAN orange, quinacridone magenta, quinacridone violet, organic red, or a mixture thereof.

25. The method of claim 24, wherein the organic red is a metallized azo red, a nonmetallized azo red, or a mixture thereof.

26. A method of making a colorant composition comprising admixing the copolymer surfactant of claim 2, water and at least one pigment, wherein the pigment is an organic pigment, an inorganic pigment, or a mixture thereof.

27. The method of claim 26, wherein the colorant composition further comprises at least one conventional surfactant.

28. The method of claim 27, wherein the conventional surfactant is an anionic surfactant, a nonionic surfactant, an amphoteric surfactant, or a mixture thereof.

29. The method of claim 26, wherein the colorant composition further comprises a water-soluble polymer selected from a polycarboxylic acid, a copolymer comprising a monomer containing a carboxylic acid, an alkali soluble emulsion polymer, a cellulose derivative, a salt of a polyacrylic acid, a salt of a copolymer comprising a monomer containing an acrylic acid, polyvinylpyrrolidone, a copolymer comprising vinylpyrrolidone monomer, or a mixture thereof.

30. The method of claim 29, wherein the water-soluble polymer is a salt of a polyacrylic acid, a salt of a copolymer comprising a monomer containing an acrylic acid, or a mixture thereof.

31. The method of claim 26, wherein the inorganic pigment is titanium dioxide white, carbon black, lampblack, black iron oxide, yellow iron oxide, brown iron oxide, red iron oxide, or a mixture thereof.

32. The method of claim 26, wherein the organic pigment is phthalocyanine blue, phthalocyanine green, monoarylide yellow, diarylide yellow, benzimidazolone yellow, heterocyclic yellow, DAN orange, quinacridone magenta, quinacridone violet, organic red, or a mixture thereof.

33. The method of claim 32, wherein the organic red is a metallized azo red, a nonmetallized azo red, or a mixture thereof.

34. A paint comprising the colorant composition of claim 14 and a tint-base.

35. The paint of claim 34, wherein the paint does not substantially change color after rub-up.

36. The paint of claim 34, wherein the paint is a solvent-based paint.

37. The paint of claim 34, wherein the paint is a latex paint.

38. The paint of claim 37, wherein the paint further comprises at least one associative thickener.

39. The paint of claim 38, wherein the associative thickener is a nonionic hydrophobically modified ethylene oxide urethane block copolymer, a hydrophobically-modified polyether, a hydrophobically-modified alkali soluble emulsion, a hydrophobically-modified poly(meth)acrylic acid, a hydrophobically-modified hydroxyethyl cellulose, a hydrophobically-modified poly(acrylamide), or a mixture thereof.

40. The paint of claim 37, wherein the Stormer low-shear viscosity of the paint is within about $\pm 10\%$ of the Stormer low-shear viscosity of the tint-base from which the paint was formed.

41. The paint of claim 37, wherein the Stormer low-shear viscosity of the paint is within about $\pm 5\%$ of the Stormer low-shear viscosity of the tint-base from which the paint was formed.

42. The paint of claim 37, wherein the Stormer low-shear viscosity of the paint is within about $\pm 3\%$ of the Stormer low-shear viscosity of the tint-base from which the paint was formed.

43. The paint of claim 37, wherein the ICI high-shear viscosity of the paint is within about $\pm 10\%$ of the ICI high-shear viscosity of the tint-base from which the paint was formed.

44. The paint of claim 37, wherein the flow/level rating of the paint, measured at 25°C according to ASTM Standard D4062-99, is about 10.

45. A paint comprising the colorant composition of claim 16 and a tint-base.

46. The paint of claim 45, wherein the paint does not substantially change color after rub-up.

47. The paint of claim 45, wherein the paint is a solvent-based paint.

48. The paint of claim 45, wherein the paint is a latex paint.

49. The paint of claim 48, wherein the paint further comprises at least one associative thickener.

50. The paint of claim 49, wherein the associative thickener is a nonionic hydrophobically modified ethylene oxide urethane block copolymer, a hydrophobically-modified polyether, a hydrophobically-modified alkali soluble emulsion, a hydrophobically-modified poly(meth)acrylic acid, a hydrophobically-modified hydroxyethyl cellulose, a hydrophobically-modified poly(acrylamide), or a mixture thereof.

51. The paint of claim 48, wherein the Stormer low-shear viscosity of the paint is within about $\pm 10\%$ of the Stormer low-shear viscosity of the tint-base from which the paint was formed.

52. The paint of claim 48, wherein the Stormer low-shear viscosity of the paint is within about $\pm 5\%$ of the Stormer low-shear viscosity of the tint-base from which the paint was formed.

53. The paint of claim 48, wherein the Stormer low-shear viscosity of the paint is within about $\pm 3\%$ of the Stormer low-shear viscosity of the tint-base from which the paint was formed.

54. The paint of claim 48, wherein the ICI high-shear viscosity of the paint is within about $\pm 10\%$ of the ICI high-shear viscosity of the tint-base from which the paint was formed.

55. The paint of claim 48, wherein the flow/level rating of the paint, measured at 25°C according to ASTM Standard D4062-99, is about 10.

56. A method of making a paint comprising admixing a tint-base and
5 the colorant composition of claim 14.

57. A method of making a paint comprising admixing a tint-base and the colorant composition of claim 16.